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ABSTRACT

The 3-week workshop concentrated on techniques and procedures for research proposals and projects in vocational education, with special emphasis on research at the local level. Participants were involved both in the formal workshop sessions and in the design of actual research proposals. A summary of two panel discussions and manuscripts for the following presentations are included: (1) "The Framework and Concept of the Wyoming Research Coordinating Unit" by Bruce C. Perryman, (2) "Basic Research Methods in Vocational Education" by Robert F. Noble, (3) "Regional Project Research" by Lewis Crum, (4) "Research in Industrial Arts Education" by Lyndall Lundy, (5) "Research in Vocational Agriculture, Off-Farm Opportunities and Training Needs" by William W. Stevenson, (6) "Spiralling Curricula and Instruction in Home Economics" by Pauline G. Garrett, (7) "Research in Business Education" by Roland C. Waterman, (8) "Vocational Education and the Occupational Mix" by Calvin Lower, and (9) "Private Business Schools" by Charles Lein. (CH)

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RESEARCH SEMINAR
IN
VOCATIONAL EDUCATION

COLLEGE OF EDUCATION

UNIVERSITY OF WYOMING

SUMMER 1968

U.S. DEPARTMENT OF HEALTH, EDUCATION
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SELECTED PROCEEDINGS AND INFORMATION FROM THE 1968 SUMMER WORKSHOP IN RESEARCH IN VOCATIONAL-TECHNICAL EDUCATION

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1968

PREFACE

In a further attempt to better meet the vocational needs of the youth of Wyoming, the second annual Workshop in research in Vocational-Technical Education was conducted during the Summer of 1968. The three-week program was co-sponsored by the University of Wyoming and the Wyoming Research Coordinating Unit, Vocational- Technical Education Division, Wyoming State Department of Education.

The participants in the workshop were selected by the co-directors, Dr. James Zancanella, Chairman, Department of Vocational and Business Education, University of Wyoming; and Bruce C. Perryman, Director, Wyoming Research Coordinating Unit. All of the participants were involved in public education in the State of Wyoming, with five of the participants being school administrators and the remaining eleven coming from the areas of Business and Office Education, Distributive Education, Home Economics Education, Vocational Agriculture, Industrial Arts, and Guidance.

The Workshop featured speakers and presentations outlining the steps and procedures of developing research proposals and projects, and demonstrations of the latest techniques and tools available to the modern researcher in education.

Mr. Bruce C. Perryman outlined the framework and concept of the Wyoming Research Coordinating Unit with special emphasis being devoted to the procedures and techniques of writing research proposals, the funding of research projects, and the assignment of proposal problems.

Dr. Robert F. Noble of the University of Wyoming presented current techniques of basic research methods and design used in educational research. A representative of the United States Office of Education from Denver, Colorado, Dr. Lewis Crum provided the participants with insight into methods of writing acceptable proposals for Federal funds. His presentation also provided information concerning the guidelines for the Regional Project Research Program which offers funds for research projects up to $10,000.

Dr. Lyndall Lundy of the University of Wyoming discussed current research and curriculum development in industrial arts education. Off-farm agricultural education or Agri-business was the subject of a talk by a Dr. William Stevenson of the Oklahoma Research Coordinating Unit. With the current rise of this new service industry, the need to identify the existing problems, occupations, and competencies were emphasized by Dr. Stevenson. Dr. Pauline Garrett of the U. S. Office of Education encouraged new curriculum developments in home economics education by offering a challenge for continued creativity in home economics.education

New findings and application for research in business education were stressed by Dr. Roland C. Waterman of Colorado State College. Outstanding research topics were noted for their special adaptability in the classroom. "Vocational Education and the Occupational Mix," was the presentation by Dr. Calvin Lowe of Utah State University. Dr. Lowe advocates developing breadth as well as depth in the vocational education programs.

Mr. Charles Lein, an assistant professor of business administration at Montana State University, discussed the role of the private business college in the vocational education program. At the present time, there are over 5,000 private and independent schools in the United States. This area of private education, Mr. Lein stressed, is probably the most neglected and least known in the American educational system.

Two panel discussions centering around the topic, "The Status of Vocational Education in Wyoming," featured twelve prominent educators from the State of Wyoming. The panel members included Dr. James Zancanella and Mr. Bruce C. Perryman, co-directors of the Workshop; Mr. Jack Ruch and Mr. James Durkee, Teacher-Educators Vocational Agriculture Education, University of Wyoming; and the following members of the Wyoming State Department of Education: Mr. Charles Kline (Director, Vocational-Technical Education); Mr. Charles Burke (Consultant, Industrial Arts Education); Mr. Lewis Finch (Director Research and Development); Mrs. Myrtle Gillespie (Director, Home Economics Education); Mr. Marvin Hoflund (Director, Trade and Industrial Education); Mr. Thomas Morris (Director, Pupil Personnel Services); Mr. Keiji Okano (Director, Business and Distributive Education); and Mr. Richard Rowles (Director, Adult Basic Education).

The participants in the Workshop spent most of their out-of-class time reading supplementary materials and preparing individual research project proposals. These proposals were submitted to the Wyoming Research Coordinating Unit at the end of the Workshop. Many of the research projects were funded and investigations were initiated during the 1968-69 school year.

The evaluations at the end of the Workshop indicated that the Wyoming Research Coordinating Unit and the University of Wyoming were successful in accomplishing the intended purpose of the Workshop. A selected group of Wyoming educators were oriented to the need, techniques, procedures, and applicability of research in the various areas of vocational education, with special emphasis being directed toward research on the local level. The orientation to research was supplemented with constant participation and student-involvement, in both the formal workshop sessions and in the participant's design of actual research proposals.

Although the long-range results of the workshop will be difficult to measure, the development of innovative research in vocational education in Wyoming, and in the United States as a whole, will ultimately enhance the quality of vocational programs throughout the country. This research will lead to an improved final product from the educative process--better prepared graduates who can make significant contributions to society.

THE FRAMEWORK AND CONCEPT
OF THE WYOMING RESEARCH COORDINATING UNIT
FOR VOCATIONAL-TECHNICAL EDUCATION

Bruce C. Perryman
Director, Wyoming Research Coordinating Unit
State of Wyoming
Department of Education

I. Introduction: Research, Training, Experimental, Developmental, and Pilot Programs

A special provision of the Vocational Education Act of 1963 emphasizes research and experimentation to improve and strengthen the vocational education program throughout the United States. This provision reserves 10 per cent of the basic appropriation for grants each year to pay part of the cost of research, training, experimental, developmental, or pilot programs which are designed to meet the special vocational education needs of youth, particularly those with academic, socioeconomic, or other handicaps.

These grants are awarded by the U. S. Commissioner of Education directly to colleges and universities, other public or nonprofit agencies and institutions, State Boards of Vocational Education, or to local educational agencies with approval of the State Board. While the State Board's approval is not required for a grant to a college or university, the USOE recommends that the proposal be developed with the knowledge of an appropriate Board Official.

A total of $17.75 million was authorized for these grants in Fiscal 1966 and $22.5 million for each year thereafter; however, due to the Viet Nam War and other federal projects, an apparent lesser degree of emphasis has been given to research for Vocational Education.

In administering the research, training, and experimental programs the USOE is concerned with three general subject areas:

1. The identification of current and future employment opportunities and the skills needed to hold the available jobs.

2. The development of human resources, including studies of the characteristics of vocational students and the implications of this information for vocational education programs.

3. The development of educational resources and training programs, including improvements in vocational curricula and vocational guidance and counseling.

The USOE staff offers consultation in the preparation of research proposals, particularly to institutions, school districts, and community colleges which are not experienced in the planning and writing of research applications.

The USOE, through its Division of Adult and Vocational Research, also offers assistance in expanding state and regional capabilities for research and development in occupational education. Several research centers are planned to administer projects, develop materials, train teachers, and serve as clearing-houses of information. The first such center was established at Ohio State University under a $610,130 Federal grant.

Federal grants for research, training, experimental, developmental, or pilot programs cover the major part of the cost of the project. The applicant institution or agency is expected to contribute some funds or services to the over-all cost. No fixed percentage or amount is set, but the average rate of contribution has been 20 per cent.

Application Procedure: Applications for research, training, experimental, developmental, or pilot grants are submitted to:

Bureau of Research
Division of Adult and Vocational Research
Office of Education
Department of Health, Education, and Welfare
Washington, D. C. 20202

There are four deadlines per year for applications: September 1, December 1, March 1, and June 1. Applications must be prepared in accordance with instructions and a format contained in a pamphlet published by the Division of Adult and Vocational Research, entitled "Conditions and Procedures: Grants for Research, Training, Experimental, Developmental, or Pilot Programs in Vocational and Technical Education." Twenty copies of the application are required.

An application must describe the project and its objectives, list principal investigators and personnel involved, and include a budget. The budget may cover salaries and wages, costs of materials and supplies, rental of special equipment, travel, and costs of publishing results of the project. An allowance for indirect costs, to cover overhead expenses, is limited to 20 per cent of the total direct costs.

Each institution or agency receiving a grant is expected to provide the Division of Adult and Vocational Research with 225 copies of its final report on the project and 25 copies of an abstract of the report.

Evaluation Criteria: Applications for grants are reviewed by the Division of Adult and Vocational Research and various review panels. All proposals are evaluated according to their educational significance, the plan for the program, the experience of key personnel, the adequacy of facilities, and the economic efficiency of the proposal.

With proposals for experimental, developmental, or pilot programs, special consideration is given to programs involving youths in economically depressed communities who have academic, socioeconomic, or other handicaps which prevent them from succeeding in regular vocational education programs. Another factor is the experimental or innovative aspect of the proposal.

II. The Wyoming Research Coordinating Unit for Vocational-Technical Education

Sometimes it is not possible to institute as part of the regular vocational education program, the special services and educational aids designed to benefit the economically, the academically, and the socioeconomically handicapped, because sufficient funds are not available or because other educators or other community agencies require more proof of the necessity for, or probable success of, such programs before they will extend the necessary cooperation.

The answer to this problem quite likely may lie in developmental, experimental, or pilot research programs.

Equally important is the basic fact that the regular vocational education program, without proper and valid discovery of its necessity, is merely a rationalization for existence. Ongoing research, research proposals, and proposals for developmental, experimental, and pilot programs which deal with the vocationally oriented should be coordinated within the State. There is a need for coordination between those doing research and those who need the new knowledge to improve programs.

The Vocational-Technical Education Research Coordinating Unit (RCU) was approved for the State of Wyoming effective June, 1966. The Unit was funded under provisions of Section 4c of the Vocational Education Act of 1963, and is located in the State Department of Public Instruction. The Unit is responsible to the State Director for Vocational-Technical Education, Mr. Charles A. Kline.

As a service-oriented arm of the Vocational-Technical Education Division, the Research Coordinating Unit provides leadership in stimulating research and development activities within the State. In view of its coordinative capacity, the Unit works closely on multilateral basis with the University of Wyoming, community and junior colleges, area vocational-technical schools, local school districts, governmental agencies, business and industry, labor, and all other entities interested in vocational-technical education research. Through interaction of research with these agencies, the Research Coordinating Unit gains vocational-technical information which has proven valuable and applicable to the improvement and the development of new programs for the State of Wyoming.

Purpose of the RCU

It is the intent of the Wyoming Research Coordinating Unit to relate all statewide vocational-technical education research activities in such a manner that isolated and uncoordinated research programs and activities will become more unified, thereby benefiting all students and professionals engaged in vocational education. The RCU is not intended to be a research agency.

Specifically, the Research Coordinating Unit follows the broad objectives set forth in the First National Meeting of Directors of RCU in Washington, D. C., in July, 1965:

1. Establishment of an atmosphere in Wyoming that commits itself to research and is receptive to it--especially with State staff, school leaders, legislators;
2. Stimulate projects, ideas, and understanding of research;
3. Provide leadership in research related activities . . . seminars, conferences;
4. Coordinate State education research efforts in the State agency and with other State government and professional agencies and professions;
5. Serve as consultants on research ideas and projects that forward vocational education;
6. Disseminate research information that enables others to utilize recent research findings;
7. Identify research training needs and personnel;
8. Work toward the identification of basic issues and problems needing research;
9. Develop long-range plans for research;
10. Gather or assist in gathering needed data for a potentially computer-based system of educational information;
11. Work closely with R & D Center and Project and U. S. Office of Education personnel in coordination of total research effort.

Continuous Activities to Date

The following list includes most of the continuous activities of the Wyoming RCU:

1. Review and collection of all available research literature.
2. Coordinate research efforts with the vocational education staff in all areas of the Department of Public Instruction.
3. Coordinate research activities with staff at the University of Wyoming.
4. Assist in the development of research proposals.
5. Contact educational agencies, business and industrial associations, state and federal government agencies, such as the Wyoming Employment Security Commission, Governor's Labor Force Survey Committee, and others, to collect occupational information and research and to acquaint them with our activities.
6. Preparation of a foundation for vocational-technical education research needs in Wyoming. The RCU is making an extended study of research undertaken in Wyoming (of vocational-technical education and related areas) since 1960 that has direct application to vocational-technical occupational education (all levels).
7. Conducting a research personnel inventory--surveying persons trained in research methods and statistics who are working on closely related vocational-technical education aspects.
8. Setting up RCU library--gathering, classifying, and filing pertinent research reports, statistics, and other data for use in total State-wide R & D effort.
9. Preparation of a guide for writing and submitting research proposals at federal and state levels.
10. Implementation of ongoing public relations program for RCU.
11. Soliciting research reports from other states for dissemination to interested persons, groups, agencies, etc.
12. Identification of basic issues and problems needing research in Wyoming.
13. Development of long-range research plans for Wyoming.
14. Gathering data for a computer-based system of educational information.
15. Establishing communication with RCUs in other states through exchange of reports, brochures, and other information including direct correspondence plus attendance at regional and national meetings.
16. Development and analysis of the cost of vocational education in Wyoming

17. Continuous effort to coordinate research throughout the State.

18. Introduction of the Unit and its activities to the various segments throughout the State

Concluding Statement and Projections

Considering the length of time which the RCU has been in existence, some activity has been devoted to normal organization and procedure development. These activities have been directed by the premise upon which the RCU is based. This basis is the belief that any educational agency is a service institution. In order for the State's educational agencies to provide services, they must first know what services are desired and needed and what procedures best fulfill their needs within their constituent areas. It is toward this end, that is, aiding educational agencies in determining the needs of the people and the best methods of fulfilling these needs, which the activities of the RCU have been directed.

BASIC RESEARCH METHODS IN VOCATIONAL EDUCATION

Robert F. Noble

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College of Education

University of Wyoming

What is Research?

What is good research and how does it differ from "innovation and tryout" and "purposeful trial and error"? ~~Good~~ research is generally identified by five characteristics: detailed preplanning, careful control, accurate measurement, predictive results, and determined objectives on the part of the researcher. Innovation, tryout, and purposeful trial and error usually do not incorporate the above-mentioned characteristics of good research. When the characteristics are used, they are not incorporated with degree of skill and determination which is characteristic of their use in good research.

Defining the specific problem is one of the most difficult tasks in applying research to the problem-solving situation. Applying the scientific method to the problem-solving task is the recommended approach for both professional researchers and for teachers engaging in part-time research. Applying the scientific method to the solution of any problem requires that the researcher first specifically state the nature of his problem. The second step involves searching for tentative answers to the problem and establishing the hypotheses. He must then test the hypotheses and select the one hypothesis which best fits the evidence. If one recognizes the applicability of the Law of Parsimony, he will strive for simplicity in the conclusion.

Where Is Research Today?

Since the launching of Sputnik, there has been a great deal of criticism directed toward all areas of American education. The results of such criticism has stimulated a great deal of research and has led to the discovery of new and better ways of teaching. The fusion of the new methods and approaches with the old methods and approaches has frequently caused education to come under the scrutiny of those who are affected by the changes.

Because of the great amounts of new knowledge which is continually being discovered in all fields, it has become obvious that teachers cannot cover all of the details in a subject area. Research must be undertaken by individual teachers, in an effort to discover which concepts and principles should be covered in a course and which should be omitted. The overall long-range objective should be to give the students a firm background in a particular discipline so that they might advance on their own and seek the details in their area of specialization.

In the past, research has not been a very important segment of the educative process. In 1950, only five one-hundredths of one per cent of the nation's total school budget was devoted to research. Some school administrators are currently recommending that as much as ten per cent of the total school budget go into research. Although ten per cent is a somewhat idealistic figure, and we will probably never approach that level of emphasis in educational research, it does illustrate the trend toward greater emphasis in such research.

Characteristics of a Good Researcher

What qualities make a good researcher? I believe the first quality a good researcher should possess is that of being highly observant; he must be aware of what is going on around him. He should also be very objective and accurate in his approach to research. He must have the courage to stand behind his convictions, and should be willing to go out on a limb in representing his own ideas. A good researcher must be willing to involve himself in details, and should possess an innate curiosity to answer the question "WHY?"

Methods of Research

Historical research. This is one of the oldest methods of research. Historical research includes much more than merely collecting facts and figures from a certain period of time; it also includes analyzing the data, arriving at conclusions, and drawing inferences. Good historical research almost always requires direct examination of the original materials or documents.

Historical research may be approached in either an internal or external manner. When the techniques of external appraisal are employed, the researcher attempts to determine the authenticity of a document, while internal appraisal deals with the truthfulness of the content of the document. The individual engaging in historical research should be aware of the potential dangers inherent in the approach: (1) decisions can easily be based on insufficient evidence, and/or (2) the data may be improperly selected.

Experimental research. Experimental research is concerned with both human and non-human data. In an experimental design, the researcher has a system of both qualitative and quantitative analyses which enable him to control his data collection process. In imparting such control, the researcher should incorporate "Mills Five Cannons," which were developed by John Stewart Mills. These include:

1. Method of agreement. This states that if the circumstances leading to a given event have in every instant only one factor in common, it is very probable that that factor is the cause of the difference. One of the problems with this approach is that it is frequently difficult to relate or locate all of the factors related to an experiment. The second potential problem is determining the significance of each factor, as related to the particular problem.

2. Method of difference. This method involves the situation in which all factors but one are alike. When that one factor is present a certain outcome occurs, and when that factor is absent the outcome does not occur. The method of difference is frequently used in experimental research.

3. Joint method of double agreement. This method utilizes the method of difference and the method of agreement, and measures the difference between them. One of the problems associated with this method centers around the difficulty in obtaining situations which involve factors common to both of the preliminary methods.

4. Method of concomitant variation. This is when two variables are interrelated and move together in the same direction and at the same time. When this occurs, one of the variables is affecting the other, or they are both being affected by an outside factor.

5. Method of residues. Purposeful trial and error dominates this approach, as the researcher continually eliminates potential causal factors, until the true cause is determined.

Three different methods of experimentation are usually employed in educational research. These include the one-group technique, the parallel-group method, and the rotation-group method. The one-group technique is most common in educational experimentation because it disturbs the typical classroom situation less than do the other methods. In using the one-group technique, a single factor is either added to, or taken from, the study group, with the results being observed and measured. The major obstacle to using the one-group technique is that it is very difficult to limit the external factors which might influence the results of the study.

The parallel-group method involves a control group and an experimental group. An experimental factor, or variable, is applied to the experimental group, while the control group remains in the same relative position. Following the application of the experimental variable, the two groups are equated, with the differences being measured and interpreted. When the parallel-group method is used in an experiment involving human beings, several potential problems may be anticipated. Because of the great difference in individual personalities, there is always a problem in equating and determining the control group and the experimental group. Teacher attitude toward student experimentation and obtaining large enough experimental and control groups can also pose problems for the researcher.

The problems associated with adequate sample size can sometimes be overcome by using either the co-twin or matched-pairs technique. The co-twin technique involves twin specimens, such as twin sheep or twin cattle. Although researchers occasionally work with twin human beings, it is very difficult to find an adequate number of twins in the same period and in the same class. The matched-pairs technique involves pairs of individuals who are as much alike as possible, with experimental factors being applied to one group and not to the other.

With the rotation-group method, several experimental groups are selected and each experimental factor is applied to each group on a rotation basis. The effect of each factor on each group is then measured. This method is frequently used and is quite effective because it is possible to identify external causal variables in individual groups.

Normative Survey

The normative survey method of research is the most common type of research in education. It is also known as a descriptive study, status study, and simple survey study. This method is used to determine existing conditions and/or to determine the frequency of particular behavior items. The greatest disadvantage of the normative method is that it merely describes conditions as they are; it does not determine "what should be," or "what is best." The fact that a majority of people are in favor of doing something a certain way does not necessarily mean that their method is the best.

Interview. The interview is one of the most satisfactory techniques of the normative survey. This technique is especially valuable if the researcher is seeking to determine individual likes and dislikes. It enables the researcher to obtain direct answers from his study population and allows him to observe the amount of thought devoted to each response.

Questionnaire. The questionnaire is usually the least expensive way of obtaining research information. One of the major problems associated with the questionnaire concerns the researcher's difficulty in appraising those who respond.

Questionnaires are usually recognized as being either open-form or closed-form. This categorization is based on the form and style of the questions. With the open-form, the respondent writes out his own answer to each question, while the closed-form has a limited number of responses which are checked by the respondent. Although the open-form frequently gives a better indication of the respondents' true feelings, it is more difficult to tabulate than the closed-form. Occasionally, a researcher will combine the open- and closed-forms in an effort to build more flexibility into a questionnaire.

Opinionnaire. The opinionnaire seeks the respondents' candid opinion on certain items of interest. The information obtained from opinionnaires is frequently of limited scientific value, as responses are often on the spur-of-the-moment and do not reflect the respondents' true feelings. It is, however, used as a "sounding board" on critical issues. From this type of initial exposure, other kinds of research may be developed.

Other types of instruments used in normative surveys include: survey testing, survey appraisal, documentary frequency, observation, and directed observation.

Case study. The case study is used most frequently by guidance personnel and others who are concerned with human behavior, growth, and development. Methods employed in the case study include the interview, longitudinal analysis, and cross-sectional analysis. When the longitudinal technique is used. a relatively small group of individuals are observed over a long period of time--usually for more than three years. Cross-sectional analysis involves the immediate and limited observation of several different age groups.

Correlation Research

Correlation research applies statistical analysis in determining the relationship between two measurable items. One of the potential problems in this area is that the mere fact that two items vary together does not mean that a change in one item will cause, or is caused by, a change in the other item. Both analytical and predictive statistics are used in correlation research.

Action Research

Action research is on-the-job research, where the researcher is primarily concerned with information and results as they are related to him. Action research is not as intent, scientific, or controlled as closely as pure research. In terms of practicality, however, action research is of great value to the individual teacher or novice researcher who is primarily concerned with solutions to his own problems.

Action research is frequently applied on a vertical basis, such as determining the effectiveness of a language arts program in kindergarten through the sixth grade. An example of action research on a horizontal basis would be for all sixth grade teachers in a school system to group their experiences together in an effort to develop greater continuity in their total program. In actuality, the application of action research is limited only by one's imagination.

REGIONAL PROJECT RESEARCH

(Small Project Research)

Dr. Lewis Crum

U. S. Office of Education

Denver, Colorado

The Office of Education's nine regional offices administer a program particularly designed to support significant, small-scale educational research projects and to encourage faculty members of small institutions to participate in educational research, although personnel of large schools are also eligible.

To qualify for the program, called Small Project Research, proposals for educational research must meet two basic requirements: the total investment by the Office of Education must be no more than $10,000, and the project must have a capability of being completed within a period of eighteen months.

Small Project Research accounts for more than fifty per cent of all research proposals submitted to the Office of Education each year, even though the number of dollars allotted for The program is small when compared with the amount awarded all educational research work. During the fiscal year 1968, it is expected that about 350 projects will be supported under the program.

The Small Project Research Program is unique in that it is the only regionally administered research program. The regional approach allows the researcher and the reviewer a better opportunity to examine closely each other's aims and purposes. Proposals are finally reviewed by a panel made up of non-government advisers and Office of Education staff. If the proposal is approved a contract is negotiated at the regional level.

The majority of small projects concern teaching strategies and techniques, learning characteristics of students, and validations of innovative educational

Research proposals in many fields of learning may qualify for support insofar as they relate to education. Some projects may investigate promising programs or practices designed to bring about desirable educational change; others may investigate factors related to the change process itself. Eligibility may be extended to projects seeking to explore educational needs or to resolve educational issues of broad concern. Studies designed to develop program and activity models that are generalizable would also be eligible.

In the areas of curriculum development, the following guidelines are offered. Curriculum development goes beyond the mere formulation of a course of study. The goals and needs of the community and students must be considered and translated into specific objectives. Priorities among these objectives must be set, and a review of recent advances in subject matter and learning theory must be conducted.

Curriculum development proposals submitted for support must be carefully formulated if something of real significance is to emerge. Curriculum development is frequently too comprehensive or time consuming to be accommodated by Regional Project Research. Certain limited curriculum development objectives, concisely stated and presented as an independent project, are appropriate for consideration.

A curriculum-development proposal should stress investigative or experimental activities rather than program implementation. Furthermore, the project should be innovative and go beyond what the institution would normally undertake. It should also hold promise for contributing to existing knowledge about curriculum and should have more than local applicability. A curriculum-development design is comprised of a statement of objectives, a description of methodology, a scope and sequence of learning experiences, a delineation and description of content, and procedures for evaluation.

programs. Projects often lead to more extensive research in the same area. However, in no cases are grants awarded for planning proposals. Each proposal must be able to stand alone as a complete and valid research project.

One of the key determinants in awarding a grant under this program is whether or not the findings of the project will be significant to other groups, institutions, and areas of the country.

Areas of Appropriate Research

To be eligible for support a project must (1) be research or research-related, (2) show promise of improving education, (3) have general (not purely local) applicability, and (4) be directed toward communicable results.

The term "research-related" is broadly interpreted to include such activities as development of materials and improvement of instructional practices in general and specific areas, and the assessment and reevaluation of the results of research. Local projects must lead to findings significant for other settings if they are to be considered eligible for consideration.

Educational research is differentiated from other types of research by the relation of the problem to an understanding of, or an improvement in, the process of learning or teaching. It is this characteristic that should be made clear when describing the possible or probable contribution that a proposed research project will make.

Basic research on the learning process, or on human development, or research in the social, biological, or chemical aspects of this process are all appropriate areas for support as Regional Project Research. Basic experimental research in a field other than education, such as scientific experimentation, would be ineligible for support. For example, the assessment of a new approach to the teaching of physics would qualify for consideration, while experimental research in the science of physics would not be eligible for support.

Two areas, creation and validation, may be identified within curriculum development. They might be treated separately or coordinately in a proposal to create or validate products or processes as parts of a total curriculum development design, or, in unusual cases, could meet the requirements of the entire design.

When the research is primarily creation of curriculum, the proposals should include the following:

1. Describe the theoretical background, related research, and bases by which new types of students' experiences will relate to objectives of instruction.
2. Designate which curriculum design areas are involved and reflect knowledge of previous work in the area.
3. Illustrate the process or procedure to be used, giving attention to how the present curriculum will be improved.

When the research is primarily validation of curriculum products or processes, the proposal should include the following:

1. Delineate the areas of curriculum design under investigation.
2. Identify the relevant variable designated for study and the procedures for determining the effects of the variables.
3. Describe the population involved, the data to be gathered, and the instruments to be used.

Criteria for Evaluating Proposals

Criteria for evaluating Regional Project applications are the same as those for other projects and programs administered by the Bureau of Research, except that competition is regional rather than national. The primary criterion is educational significance--the project's probable impact and its capacity for continuous and effective contribution to educational improvement.

Sharing by the applicant in the total costs of each proposal supported by the Bureau of Research is required. However, the extent of cost sharing is not a factor of eligibility or evaluation.

Generally, proposals are evaluated and recommended for approval according to these criteria:

1. Educational significance.
2. Soundness of design, procedure, or operational plan.
3. Adequacy of personnel and facilities.
4. Economic efficiency.
5. Other specific criteria, as appropriate.

Evaluation of a proposal's significance to education requires more than consideration of the project itself. It involves attention to the breadth of the project's probable impact, its relationship to other ongoing and completed research, and its capacity for contributing to educational improvement within the context of total research needs.

Educational significance, then, is the first of several conditions for support; but if a proposal lacks adequate technical quality, personnel, or economic efficiency, it will not be supported, regardless of its significance. In like manner, no matter how technically excellent the proposal may be, its support is contingent on its significance to education nationally.

Funds are not available to support all the good proposals submitted to the Regional Research Program; the current approval rate is about one in five. In any case, selection of any given activity for support is based on systematic evaluation of the plan set forth in the formal proposal document and determination of whether it meets the needs of education.

RESEARCH IN INDUSTRIAL ARTS EDUCATION

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Before any type of research can be done in industrial arts, the definition of just what industrial arts is must be firmly fixed in the researcher's mind. In almost every professional meeting of industrial arts educators, this topic becomes the center of discussion. Generally, it is agreed that industrial arts is:

1. Nonvocational in nature.
2. A phase of general education.
3. A place to present to youngsters an opportunity to use tools and materials in constructing projects to show or give an appreciation of modern industry.
4. Exploratory in nature.
5. Concerned with the development of useful habits and desirable attitudes.
6. Useful in enabling youth to understand modern industry, industrial processes, technological problems and their social and economic influences upon the life of men.

Since some agreement is noted as to what industrial arts includes, it is also important to examine certain factors which influence and determine industrial arts programs across the nation.

The American urban society with its dependence upon industrial products and its concern with mechanization for increasing living standards, dictates the pattern for education and industrial arts in particular. A society made up of individuals who are likely to move from one state to another with the demands of employment, present special problems for the educational system.

Society must produce indivuduals with higher mechanical aptitudes than ever before. This need, along with the other characteristics of society, indicates certain sociological factors which must be studied for implications in the educational system.

Changes in industry itself also suggest changes for industrial arts programs. Industrial arts follow industry as its basis for subject-matter content. If industrial arts is to keep pace with the industrial society, it has to undergo some change in its area of concentration. Curriculum changes are rooted in social changes and industrial arts is no exception.

Curriculum Development

There is much disagreement as to the way industrial arts is being taught today. Studies of state curriculum guides across the United States show that curriculum contents are primarily concerned with handtools and operation of machines. There is little agreement among the states as to what should be taught. However, there are many valuable new approaches for teaching in this area.

The Industrial Arts Curriculum Project. The Industrial Arts Curriculum Project (I.A.C.P.) is an effort of Ohio State University in cooperation with the University of Illinois. This program is sponsored by the Bureau of Research and the U. S. Office of Education and advocates a completely new industrial arts program.

One of the important reasons students should participate in industrial arts is for guidance and exploratory value. Industrial arts has always provided insight into the technological world of industry. It is important to have a knowledge of the effect of technology and to further update teaching to be more current with what industry is doing. After months of intensive research and development with representatives from education, business, industry, and labor the I.A.C.P. has formulated the rational that two broad technological areas should be studied in industrial arts.

The first broad area that exists is the world of construction. This is the study of man's construction processes and his major construction projects. The world of construction is being field-tested at the present time and should be ready for implementation by 1971.

The second area is concerned with the world of manufacturing. Both of the broad areas, construction and manufacturing, are broken down into smaller concepts. Under the broad category of the world of manufacturing, the students will learn how men organize industry, how men use and control materials, and how to use and develop processes which produces such items as buildings, bridges, automobiles, clothing, and utilities. Thus students will learn how tools convert materials into products that are useful.

In summary of this project, it is said that the study of industrial technology will extend and reinforce other subjects in the secondary school. It is an instructional system providing learning by doing. Students use a special textbook and workbook for out-of-class preparations and a laboratory manual for class work. This is a change from the usual program of a boy going to shop to construct a project such as a footstool. The student's educational experiences will be more effective in preparing him for more meaningful participation as a citizen in our advancing technological society.

The American Industries Project. This study is being conducted at Stout State University in Wisconsin and is even further removed from the traditional industrial-arts program than is the Industrial Arts Curriculum Project. The research has been divided into four phases: (1) planning period, (2) initial development and field testing, (3) experimentation, and (4) implementation.

The project is an experiment which aims to substitute for the conventional industrial arts course a curriculum that emphasizes an understanding of the whole spectrum of the American industry rather than just skill development. Heretofore, we have had primarily a large emphasis on skills. Some teachers hope that by making a small project and by using tools it is possible to learn about industry.

The American Industries Project uses the conceptual approach to teaching. It was decided that one of the basic things wrong with industrial arts is the fragmented approach that is being used. With this approach the emphasis has been on developing the ability to perform specific operations. The Project designers believe what is needed to make industrial arts truly a study of industry is a unifying element of concepts applicable to all industry.

At the completion of the Project in 1970, the designers plan to develop a longitudinal follow-up study to determine the long-range effects of this curriculum. The information and knowledge gained from this study will result in the needed changes in the preparation of industrial arts teachers.

Learning Processes and Teaching Methods in Industrial Arts

A large number of very good experimental studies have been done in industrial arts. An interesting study was done concerning the grip strength of a student and the ability to perform certain manipulative tasks at the junior high school age level. The study suggested that the teacher's expectation of achievement may often be beyond the student's capacity. By measuring the student's grip strength it is then possible to measure his ability to achieve in industrial arts at the junior high school.

The effectiveness of using problem-centered instruction sheets as compared with the use of traditional instruction sheets has been the topic of a current study. This study attempted to learn whether or not problem-solving is the answer to student learning. The investigator found that the problem-solving approach seemed to be favored when students were required to retain information.

An experimental study to determine the effectiveness of the use of self-instructional booklets and demonstrations was conducted in 1963. Self-instructional materials are very similar to programmed instruction. This study reports slightly higher achievement with self-instructional materials when compared with traditional classroom procedures.

Closed-circuit television was the topic of another study in learning effectiveness in industrial arts. It was discovered that there was a significant difference between conventional face-to-face demonstrations and closed-circuit television demonstrations with the results strongly favoring the latter of these two approaches.

In the use of instructional materials and devices, the 16 mm motion-picture projector was used more often than any other media. The overhead transparency ranked second in use while the least-used media was the videotape recording. There is a vast amount of instructional devices available and according to this study they apparently are not being used.

Student Personnel Services

A researcher in 1965, performed a survey to determine the vocational-guidance practices of industrial arts teachers in selected junior high schools in the United States. A majority of the industrial arts teachers who responded had professional preparation in guidance. This raises the question of the role of the industrial arts teacher in guidance. This study found, however, that the guidance functions performed were generally of an insignificant nature and were rarely included in the planned formal presentation of the class. This may not speak for all programs as this study was conducted in a selected area of the United States. For those who did stress the guidance function, they considered it one of the major functions of the junior high school to provide exploratory experiences about industry. Today, the trend is being directed more and more toward the offering of exploratory experiences as the major function of industrial arts education at this age level.

Areas Needing Research in Industrial Arts

Until the Vocational Education Act of 1963 was passed, research in vocational and technical education was limited mainly to problems of local or regional significance. In 1967, there were over 220 research projects funded through this Act and these have stimulated further research.

There is a shortage of industrial arts teachers. One of the greatest handicaps to the improvements and expansion of industrial arts programs is the desperate shortage of qualified teachers and administrators. According to the Research Division of the National Education Association, the demand for the industrial arts teachers in 1964 was 1,232 teachers and the supply was a little over 1,000 new teachers in the 37 states investigated.

Recruitment for industrial arts teachers is based on yesterday's technology. Research must be done in ways to attract students to become industrial arts teachers. Recruiting must be done at the lower grade levels. This can be done by the classroom teachers with good teaching, guidance activities, attractive brochures describing teacher-preparation activities, and scholarships. In addition, it is important to keep graduates of industrial arts in teaching and to further interest qualified people in industry to return to teaching.

Research must be conducted to determine ways in which mass-production techniques can be employed in industrial arts activities. Mass production is a very important part of industry and is not being taught to a very large degree in the program across the United States.

There is a need for research to be conducted in the field of occupational orientation. Experimentation of the various components of the orientation program is needed to determine to what extent and in what form it should be employed. New ways of combining classroom instruction and on-the-job training must also be researched.

Research and the development of new programs must solve the problems of providing teachers with more skills and knowledge necessary to teach the culturally disadvantaged. These are often the non-employed ghetto youth.

And finally, more research is needed for sound experimental methodology in the area of administration and supervision. Since the administrator is the decision maker in vocational education, this is clearly an area where research can and should contribute to the progress of industrial arts education.

RESEARCH IN VOCATIONAL AGRICULTURE

OFF-FARM OPPORTUNITIES AND TRAINING NEEDS

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Education in the United State has become more comprehensive and inclusive during the past century than in any other nation. Scientific and technological achievement as reflected in the standard of living in America indicated that American public education has been highly successful. The success of public education in the United States has resulted in reluctance to consider change in the existing system. Rapid changes in the economy and society strongly suggests, however, that changes are also needed in the educational system.

Vocational education is receiving major attention at the present time as part of the total educational needs of the nation. As a part of this consideration, the future of vocational agriculture is of major concern. When the Smith-Hughes Act was passed by the Federal Congress in 1917, more than thirty per cent of the population in the United States was actively engaged in farming. Now it is estimated that only about seven per cent of the population is engaged in farming. At the same time, nearly forty per cent of the gainfully employed in the United States have jobs in the broad field of agriculture including supplies and services to farming and the transportation, processing, and marketing of agricultural commodities in addition to farming itself.

These changes in employment do not tell the whole story. The individuals employed in farming and in agri-business are involved in a vastly different kind of agriculture than was the case in previous years. It is a more complex and demanding agriculture in terms of the needed scientific knowledge, technological skills, and management abilities. It is obvious that a program of vocational education designed in 1917 will not meet the needs of the agricultural community fifty years later.

Off-Farm Agricultural Business

As farmers across the nation become more highly trained and more efficient in adapting new technological knowledge to their farming operations, farms increase in size and the number of workers required to produce the nation's food and fiber decrease. A concomitant, yet opposite change, occurs in those businesses which perform services for farmers or which market, process, and distribute the farmer's product. Farmers are demanding more and more skilled assistance from off-the-farm businesses in the operation of their highly complex projection business. On the other hand, consumers are demanding a product which requires processing and distribution services which must be performed off the farm. Thus we have been developing in this country a vast network of enterprises to perform these services for the farmer. The term, "Off-Farm Agricultural Business," has become generally accepted as the desigination for these companies. The people employed in these businesses are said to be working in off-farm agricultural occupations.

All of the workers in these off-farm agricultural businesses need some competencies in agriculture. A growing awareness of the urgent need for more information on requirements of these off-farm agricultural occupations has prompted the State Board for Vocational Education and Oklahoma State University and many other states and universities to undertake studies which would identify the employment opportunities and training needs which exist in these particular types of businesses.

Objectives of Off-Farm Agricultural Occupations

In recognition of the need to change programs of vocational education in agriculture, and in light of the Vocational Education Act of 1963, which calls for the preparation of persons for employment in off-farm agriculture as well as for farming and ranching, state leaders in agricultural education and vocational agriculture gave careful consideration to designing their studies. The plans were oriented to achieving the following basic objectives:

1. To identify present and emerging off-farm agricultural occupations, other than farming and ranching, for which vocational technical or higher education should be available.

2. To determine present numbers of employees in these occupations, and to identify those occupational job titles which need agricultural competencies. (The term, agricultural competencies, is defined as knowledges or skills in one or more of the primary areas of plant sciences, animal science, agricultural business management and marketing, and agricultural mechanization.)

3. To estimate the annual turnover and entry opportunities in these occupations and job titles.

4. To determine competencies needed for entry and advancement in these occupations.

5. To determine other characteristics of these occupations such as beginning and maximum salary, minimum age for job entry, required formal education and experience, labor laws and union restrictions, and licensing and certification requirements.

Conclusions and Implications

Studies of employment opportunities and training needs in off-farm agricultural occupations have been conducted in 26 states. Results of the study in Oklahoma and the studies in other states should give direction to local and state departments of vocational agriculture in planning new courses or in redesigning present courses. The training needs of agriculture, both production and business, have clearly become the responsibility of vocational agriculture and these studies which have been done should be valuable aids in curriculum planning and course construction.

Many of the people working in off-farm agricultural businesses need competencies in agriculture. Many of these competencies can be taught in high school vocational agriculture classes, while many will require education beyond the high-school level. Employers expect an increase in the number of agriculturally competent employees in the next few years, and many will be looking to vocational agriculture to provide the training in agriculture.

Employers interviewed were almost unanimous in their desire for employees with training in human relations, communication, salesmanship, and safety. The need for training in the various fields of agriculture such as plant and soil science, animal science, agricultural mechanization, and agricultural business management was determined by the type of business and the level of employment being considered. Any program designed to train young men for employment in off-farm agricultural business should aim at increasing the students' abilities in this general area of employee traits as well as more specific instruction in the areas of agriculture.

A majority of the employment opportunities in off-farm agriculture are in the larger centers of population in Oklahoma. Considering this and the mobility of our population, it seems evident that our training programs in vocational agriculture must prepare students for employment opportunities which may be greater than the needs of the local community. Programs of instruction in vocational agriculture should be based on the needs and aspirations of the local students rather than the needs of the local community. Although most students may be trained for entry-level employment, many will advance to positions of leadership in agricultural industry.

More precise information is still needed to guide supervisors and teachers in program planning. Further research is indicated in the following areas:

1. A procedure for keeping informed on the needs and opportunities in production agriculture and agricultural business.
2. Detailed descriptions of the more important job titles in off-farm agricultural businesses.
3. Determination of the most efficient method or combination of methods of training for employment in off-farm agriculture.
4. Study of other businesses which may offer employment opportunities to people trained in agriculture.
5. A clear definition of what agriculture and related courses should be taught at the various levels of our educational system--high school, post high school, and college.
6. A re-definition of what is meant by agricultural competencies which includes agricultural-business competencies as well as production competencies.

SPIRALLING CURRICULA AND INSTRUCTION IN HOME ECONOMICS

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Home Economics educators are at last facing up to the task of advancing curricula and instruction so as to involve combined efforts of home economics educators and their professional co-workers. It has meant an all-out effort to cut through and dig deep into the findings from research and our heritage.

The "digging" has been most fruitful at those times and places where both research and past experiences were geared to fundamental concepts central to the understanding of individuals, by themselves or with others, at work or at leisure. The home, the child, the family, leisure and work are all basic concepts of importance to all sectors of today's society.

The development of curricula and instruction around a nucleus, namely the child, the family, the home, at leisure or at work, might be thought of as spiralling. It enables individuals to acquire an upward mobility as a result of educational experiences in home economics. It calls for constantly adjusting home and community related experiences as well as those in a classroom or laboratory.

It calls for a changing of planes (levels of development and achievement) as function and forms of experience are changed. It sometimes calls for instruction within several planes for each individual, since each individual represents different levels of personal, social, and intellectual development.

Home economics educators are applying the highest degree of intellectual foresight as they spiral curricula and instruction in order to mirror national tastes and tasks, to reflect the country's attitudes and attributes, and to shape and temper the life and work of children, youth, and adults living in homes and with families.

Central to Our Purpose. Painstaking and persevering thought has been devoted to the development of creatively diversified patterns of curricula and instruction. Just as America is in a stage of cultural transition, so are the offerings in home economics education, pre-kindergarten through adult education.

An anecdotal record from a secondary classroom visit might show student participation based on philosophical precepts evolved from a discussion of prints from "Currier and Ives." At another time, in the same place, a visitor might witness practical performances utilizing "curry and chives;" students might be involved in either family cook-outs or in a training or re-training program for chefs.

More than One. The task of spiralling curricula and instruction requires spirit and stamina (and spice!). The context within which this effort is taking place represents a framework of concepts obtained from an interdisciplinary approach to curricula and instruction.

Home economics educators in varied administrative units, whether focusing on individuals included in early childhood education, elementary, secondary, post-secondary, and/or higher education, are having professional experiences and utilizing their knowledge and skills in ways which would have the connotation of an interdisciplinary approach to these educational efforts and services. At both the preservice and inservice levels, we are finding the new and the needed in creative ways and means of working with people and their problems.

Teams. Teams for preservice and continuing educational efforts have offered direction which is neither too narrowly structured nor too broadly conceived. These teams of home economics educators have been able to spiral curricula and instruction to effectively attain goals related to the nurture of the young, management of resources, the family and its relationships, and ethics and aesthetics for the development of individuals, families and communities.

Secretary John W. Gardner said what the author feels has been used by home economics educators in the "telling of the tale"--

"Stress upon acquisition of fundamental understandings and skills, upon an effective, analytical approach to new situations, and upon acquisition of the attitudes and habits of mind that will insure lifelong learning. Vastly greater importance will be attached to continuing education. No one will be able to afford to terminate his education with formal schooling; refresher courses for professionals and every other variety of education will increasingly be prominent."

An Emerging Social Order. Spiralling curricula and instruction in home economics education by and for teams of home economics educators has made imperative an interdisciplinary approach to offerings from pre-kindergarten through adult education, within the varied administrative patterns of both new and traditional institutions. The spiralling has revealed some pluralistic solutions, pragmatic in character and yet accommodating an emerging social order, as curricula and instruction in home economics have emphasized the value of:

.... Development of cosmopolitan human beings vital for economic-personal-social-cultural orientation.

.... Development of pilot and experimental programs for youth and adults to meet their special needs and interests basic to the achievement of behavioral goals in the cognitive, affective, and action pattern domains.

.... Development of varied school and departmental organizations which have enabled staff and students to initiate, execute, and evaluate curricula and instruction in light of current intergroup factors influencing personal, family, and social values basic to the education of persons with socio-economic-intellectual differences as they strive to attain upward mobility.

Less Rigidity. Such thinking for spiralling curricula and instruction has caused home economics educators to take another look at the significance and implications of units, courses, and classes. Time and teaching have come to mean something other than that which has been built on the Carnegie unit concept.

Representatives of the community, parents, business, industry, and individuals of various age and interest groups, together with students and staff in home economics education, have activated the notion that educational experiences can extend beyond the four walls.

The notion of bringing the school into the home and the home to the school is a must. The reader might well consult Sam Sheppard, assistant superintendent of schools in St. Louis, Missouri, as to the validity of expressed ideas related to parent-child, home-school involvement. There it is being done.

Child Care Centers. Converging currents in our society have forced us to place great worth on the early education of youth. These include automation; the growth of suburban living; increased community assumption of family responsibility; educators' sensitivity to the social order and to the emotional, social, vocational and economic needs of families; and the present status of the psychological and behavioral sciences with their increasing implications for education for work.

Home economics educators are spiralling curricula and instruction to assist in establishing child care centers within the school system or community, and to assist in those already established. Although this is only one aspect of maximizing offerings from pre-kindergarten through adult education, it can serve as an example of a structure used in many institutions for many groups. It lends itself to an interdisciplinary approach to understandings related to children, homes, and families as they function in our society.

Child care centers as educational laboratories have enriched a variety of experiences for youth and adults of varying ages participating in units of study, courses of short and long-term duration, seminars and institutes, selected observations in other fields of study prior to home economics education, and practicum for students with occupationally oriented interests and objectives as well as those with the traditional home and family living goals.

Child care centers are as diversified as the organizations directing the centers and the individuals and groups being served through such facilities--namely, pre-kindergarten children, senior-high-school-age boys and girls, parents and persons in preservice or inservice teacher education programs.

Changes To Attain Excellence. Curricular and instructional spiralling has stimulated home economics educators into changing and extending the fundamental conceptions within home economics education. Clothing, food, and shelter are still basic aspects of curricula and instruction. However, such experiences as garment construction, food production or the building of model houses by various age groups have found their way into specialized-interest curricula for groups of both youth and adults with special needs.

Such classroom experiences, although representing the development of skills (manipulative, organizational and intellectural, to name only a few), have not been necessary in curricula and instruction serving all individuals with homemaking and/or gainful employment goals.

Continued creativity in spiralling curricula and instruction will pose many problems: changing goals and means of attaining the goals; changing the cognitive and affectual orientation of both new and experienced leaders in in home economics education; changing conditions under which home economics educators are functioning; changing attitudes toward what is significant in curricula and instruction as related to the home, the child, the family, leisure, and work for all sectors of our society; changing scope and sequence of experiences as related to human development, management of resources, and human relationships.

The idea of excellence in education can be realized through the spiralling of curricula and instruction, sharpening the development of skills and values associated with craftsmanship, technical knowledge and understandings, parental responsibilities and human relations for effective living with self and others, at home, at work, and at leisure.

RESEARCH IN BUSINESS EDUCATION

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Currently many new innovations and techniques have been created in business education. These have been the result of improve research and from a growing awareness of the importance of research not merely to the graduate student, but also to the classroom business teacher. Recent developments in business have been exciting and will likely be far reaching. The provision of federal funds for research has made possible the completion of research studies of considerable significance to business educators.

While we may expect in the future continued effort to improve research at the graduate level and more research by our professional organizations and our research-minded business educators, the problem of disseminating the findings of these studies is still an area needing much research. This is why I am happy to be able to present to you today a brief summary of current and applicable research in business education.

Data Processing

Data processing is a relatively new offering in the business education program and one that is becoming increasingly important. A current study surveyed fifty nationally known companies as to their requirements and training programs in data processing. Twenty-two of the firms had regular training programs. Twenty-eight firms had training, but not on a regular basis. The majority of the firms offered beginning positions in five of six operative positions, which are positions primarily for women. However, for the technical positions prior training was required along with some work experience before the technicians were assigned to a position. The implications from this study indicate that new courses in data processing at the high-school level are not absolutely necessary at the present time. Recommendations from business people can be incorporated into the secondary-school program as the need arises. The companies can aid in cooperative work experience programs, talks, field trips, career information, and as needed providing instructors from industry for instruction on the difficult machines.

Basically, a high school education is sufficient to find employment in a data processing installation. This has been the pattern in the past, at the present time, and will be the pattern for the immediate future in all but two job classifications. These two job classifications are systems analyst and supervisor.

Another study attempted to identify some of the key concepts related to data processing. This study determined that more emphasis on teaching broad concepts rather than detailed knowledge will be the trend as the business world and technology change so rapidly. Data processing has even been recommended as course of general study for all students and not just business students alone.

Typing

With the increased emphasis on the vocational competencies of the student, typewriting production has been large area of investigation recently. In an experimental study involving production, half of a class spent forty-five periods entirely on production, while the control group spent thirty of the forty-five periods on drill work, speed and accuracy drills, and only fifteen periods on production work. At the end of the experiment, the production group did better on the production tests. The results showed that intermediate typing students can develop their basic skills right along with production skill.

Non-typing activities constituted an important part of the production process. These non-typing activities included answering the telephone, looking a word up in the dictionary, or going to the file. The students need to practice the non-production parts if they are going to improve their overall production rate.

The production-typing rate as compared with the straight-copy rate is approximately sixty per cent of the latter. This indicates that students type at the slower rate even though the computation involved in the actual typing time is less.

There is no significant difference in the straight-copy skill scores of beginning typewriting students at the end of one year of instruction regardless of whether or not they were trained on a manual or an electric machine.

Composition at the typewriter is a frequent activity of typists and secretaries on the job. Yet this skill has not been taught or developed in class. During one semester of a typing course, a control group was given the customary course in typewriting with visual stimulation. The experimental group was given similar instruction with visual stimulation except that for the first ten minutes of each period the experimental group typed from the teacher's dictation. At the end of the semester the experimental group scored significantly higher than the control group in composition ability and in typewriting from dictation. The advantages of composition at the typewriter and the ability to type from dictation can be gained with no loss in speed and accuracy when typewriting from straight-copy material. Therefore, auditory stimulation should be included in daily typewriting lessons at the beginning level.

A rather interesting study was done recently to determine if it is possible to teach grammar in typewriting. By having the students type sentences that gave the grammar rules and by explaining the particular rule, the teacher attempted to teach grammar. A control group and an experimental group were used; however, there was no difference in their ability or knowledge of grammar at the end of the study period. It does not seem as though we learn knowledges and skills incidentally. These are learned best if we teach for them.

A similar study involving economic concepts instead of grammar rules was attempted. The findings indicated that there was a significant difference in gains in the experimental group over the gains of the control group in terms of economic understanding when they worked from this type of copy.

With more and more mechanical devices being offered on the educational market, more research must be done to determine the value of such hardware. In a beginning typewriting class, a device known as a skill-builder control reader may not be expected to be particularly helpful; but when the groups are divided into levels according to typing ability, the better students are more likely to benefit from the machine.

The Strong-Pacer device was a way to pace the students and is used individually. No significant difference was found either in the achievement of the skill retention of students using the pacer or those not using the pacer. Individualized pacing appeared, however, to contribute to the speed and accuracy on tests of straight copy, numbers, and surnames.

The Diatype is a type of motor-driven platen and is substituted for a regular platen. It draws the paper through the maching at a constant rate. This is used to diagnose typewriting difficulties by the spacing between the marks on the paper. Under experimental conditions, the use of the Diatype was found to be an effective means of developing greater speed in first-year typists. The use of the Diatype as a means of developing greater accuracy in first-year typists was not established.

Bookkeeping

Business educators disagree as to the aims and objectives of bookkeeping. While most teachers emphasize broad general objectives, including vocational, economic, personal and college preparatory values, considerable disagreement arises between those persons who believe the primary value of high school bookkeeping should be vocational and others who believe it should be for personal use. Regardless of the objectives claimed for the course, most bookkeeping teachers emphasize the vocational objective in their teaching.

A study of the records of small businesses indicates that more attention needs to be given in bookkeeping to compiling the cash journal, to simplified methods of closing procedures, to the preparation of typed statements and tax reports of various kinds, and less emphasis on accruals.

It appears that data processing will have relatively little effect upon generally accepted bookkeeping principles. Studies indicate general principles are present among the procedures regardless of the type of mechanization or the special area of bookkeeping.

Both instruction in economic concepts and remedial arithmetic have been incorporated successfully with bookkeeping. Students enrolled in courses where arithmetic or economic concepts were integrated with bookkeeping showed as much mastery of bookkeeping as students receiving regular bookkeeping instruction.

Students taught the use of audiovisual aids, reviewed lectures and class discussions, attention to individual instruction, and with illustrations drawn from actual business situations show greater achievement in bookkeeping than students taught without these devices. More and more teachers are utilizing such audio visual aids as overhead projectors in teaching their bookkeeping classes.

Practice sets still continue to be a commonly used instructional aid with most teachers reporting the use of one or two such sets. The students are generally permitted to progress at their own rates with completion of the practice set required by a specified date.

Shorthand

Shorthand continues to be offered for one year in many small high schools even though the teachers believe these students will not be able to take office dictation at the completion of one year of the subject. These teachers have failed to give much attention to the research studies which have consistently indicated that one year of shorthand is inadequate. Follow-up studies of high school graduates doing office work reveal that graduates with only one year of shorthand seldom use the skill vocationally.

Although it is possible for students to learn shorthand in one year, they do not acquire sufficient skill either in taking dictation or in transcription to be vocationally proficient. Recent research supports previous studies according to which only nineteen per cent of the students could transcribe a mailable letter at the end of the first year of shorthand. It is important to note that the higher the shorthand grades and high-school English grades, the higher the percentage of office workers reporting they used shorthand in their jobs. Also the higher the shorthand skill, the more likelihood there is that the student will use shorthand in an office.

Many studies have been completed during the last few years, which have attempted to determine the value of programmed shorthand materials and tapes in shorthand instruction. As yet, no significance differences have been found in the terminal achievement between classes taught with taped dictation and classes using teacher dictation. More research is needed in the areas of prgrammed instruction and prepared tapes before any conclusions can be drawn regarding the effectiveness of these new media in the area of shorthand.

While the use of voice-recording machines has increased during the past ten years, many business still require that their stenographers be able to take shorthand dictation, and they admit that there are greater opportunities for promotion for persons with shorthand skill than for those without it. Although secretarial workers receive higher salaries than voice-recording machine operators, many business executives still prefer to dictate to stenographers or secretaries rather than to machines.

Shorthand teacher should consider the findings of recent studies relative to the importance of shorthand theory and the writing of a correct shorthand outlines. If more emphasis were given to writing outlines accurately, students might attain higher dictation rates more quickly and be more accurate and rapid in their transcription.

Some students that have studied machine shorthand are handicapped in finding employment. Manual shorthand writers were actually more successful in obtaining full-time employment. Before implementing machine shorthand into the curriculum, a study of job needs and requirements should be made of the local businesses to determine whether or not there is a place for machine shorthand.

The dynamic and complex nature of our economy, the social and cultural elements within it, and our educational systems are requiring greater efforts to maintain and update vocational education strategies. The business educator must recognize his role in the development of new programs and patterns for vocational education. The knowledge of new methods and research tools will help build the vocational education profession so that it can achieve what lies ahead, rather than simply to view what has happened in previous programs and efforts.

VOCATIONAL EDUCATION
AND THE OCCUPATIONAL MIX

by Calvin D. Lowe
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The United States is presently on the threshold of the greatest era of specialization the world has ever known. The "jack of all trades" is much a thing of the past, and even the specialist has found need for further training in order to keep pace with his selected employment category in our changing world of work. Today, it is becoming as difficult to find a general practitioner in business and marketing, as it is to find a farmer who can earn a living on a 40-acre farm by milking a few cows, feeding a few hogs, and raising a few acres of cash crops. In the field of marketing, one must decide whether he is going to be a wholesaler, retailer, manufacturer's representative or one of the other specialists involved in the distributive functions necessary to move goods from the producer to ultimate consumers. Even in the very specialized area of advertising, one must decide whether he is going to write spot announcements for radio and television, develop copy or layouts for magazine ads, or specialize in writing headlines. In the field of selling, it is not unheard of to find a person who is performing specific sales functions only. In real estate offices, where commissions are large, a sales manager may find himself primarily engaged in closing real estate transactions, and seldom engaged in prospecting, overcoming objections, and other activities preparatory to closing sales.

Little more than a hundred years ago, a resident of the United States was considered to be about 90 percent self-sufficient. Most people produced their own goods and used their excess to barter at the trading post for those items which they could not produce themselves. Today, the opposite is found to be true. Man is about 10 percent self-sufficient and dependent upon others for 90 percent of all the consumer goods he uses. The new world of work has seen the employment category of agriculture reduced from one in which about 47 percent of the employed earned a living at the turn of the century to less than six percent at present; yet, we continue to have an abundance of farm products.

Following the industrial revolution, more stress was placed on selling in an effort to move large surpluses created through man's increased ability to produce. Prior to that time many consumer goods were custom made and sold before they were manufactured. At the turn of the century, emphasis began to change from one of need for expanded production to more efficient distribution. One of the biggest differences, however, between today's and yesterday's marketing activities lies in the habits of our buying public. Today's shopper has more money to spend and more places to spend it. He is also better educated and insists on product information never dreamed of by his grandparents.

Where instruction in marketing heretofore has concerned itself with channels of distribution and selling techniques in the past, salesmen will require more product information in the future. Where clean-cut lines have heretofore divided the various vocational disciplines, it appears that a "vocational mix" is developing which will require drawing talent from all the vocational services to provide our workers of the future with the attitudes and skills necessary to meet the demands of a changing world of work.

With the ushering in of the new industrial revolution called "automation," this country is seeing more than ever before the need for vocational training. Common laborers have been displaced by machines that are able to work tirelessly twenty-four hours a day, building other machines which produce quantities of consumer goods far exceeding the accomplishments of human hands. However, machines break down, wear out, and have to either be repaired or replaced, requiring the efforts of skilled hands. Although much common labor is being replaced by machines, the human element has not been replaced. Human beings are merely displaced to marketing, servicing, and improving the machines that displaced them. Actually, the awesome servant of man called "machine," has merely taken over many of the various backbreaking, tedious, and undesirable jobs of producing goods in this country. Man has been forced to upgrade his technical know-how in order to operate and service the automated machine. Thus, man has been required to learn a skill and become a specialist.

It would seem that in this world of specialization, vocational educators should be doing everything possible to streamline their various disciplines in order to prepare young people with specialized skills for employment. In the field of distribution, it is logical for students of distributive education to study retail merchandising, advertising, salesmanship, wholesaling, and various other topics which will prepare them for a specific area of marketing. However, it appears that to be trained in distributive education alone may not be sufficient for entry positions.

In recent years we have heard such terms as agri-business, agri-marketing, fashion merchandising, and others referring to new course offerings. With a significant decrease in the percentage of farm workers in the labor market agricultural educators are making an effort to expand the boundaries of their field of instruction into what they call agriculturally related subjects. Such courses are geared to prepare young people for positions with feed and seed stores, farm equipment distributors, floral shops, and a host of jobs where training in agriculture provides product information needed for business success. Thus, students of agriculture are being taught merchandising, salesmanship, business arithmetic, and other subjects in the school room and are being placed in agriculturally related distributive positions where they gain on-the-job work experience. The field of home economics is also emphasizing the need of preparing youth for gainful employment. Courses in fashion merchandising are being added to high school and post-high school curriculums with teachers of home economics placing students in distributive positions where they are able to put to practice principles of merchandising learned in school. In such cases a team teaching approach is often used to provide youth with both the marketing skills and merchandise information required for success on the job.

Distributive educators have effectively utilized the cooperative method in teaching marketing since the turn of the century. Under such a program of instruction, cooperating business organizations hire high school students providing them with on-the-job work experience. Participating students devote part of their school day studying English, history, mathematics or other courses required for graduation, and at least one class in the technical aspects of marketing. The rest of the school day is spent on the job where they receive credit and the going rate of pay for a supervised diversified work experience. The results of this type of instruction have been outstanding. Studies have been made which report the majority of coop students remained in the field of distribution after graduation from high school. Other studies reveal a larger percentage of graduates from distributive education are graduating from institutions of higher learning than the students who only took the general education classes, the conclusion being that distributive education students have the part-time jobs and means required to pay their way through college.

The cooperative method in education has proven to be a vital part of the student's training in marketing. It is understandable why teachers of home economics and agriculture interested in preparing their students for the world of work would look to classes in merchandising and the cooperative method to provide their students with the training necessary to enter America's largest and fastest growing employment category--distribution.

Home economics and agricultural instructors have developed a high competency in merchandise information. Certainly, a salesman in a feed store, department store, or any other type of wholesale-retail establishment is better prepared for his task knowing something about the product he attempts to sell. Since home economics and agricultural teachers know a great deal about color with consumer products, they definitely have something to offer the person who is going into the field of marketing as a vocation.

The high rate of business failures in the United States has emphasized the need for better training of young people for the field of business and distribution. In 1962, 15,782 businesses of all kinds failed; and almost half of these failures, 7,552, were in the retail field. Of these business failures, 90.8 percent were attributed to inexperience and incompetence. The chances of success in retailing today is most discouraging. Approximately 25 percent of those who start retail businesses fail the first year, 43 percent of the new businesses fail within three years, and ultimately the majority of new retail establishments fail.

Despite the fact, product knowledge is vital to one's success in marketing, we must not lose sight of the fact that we are definitely in a world of specialization in these United States. Gaining great breadth in vocational fields is no substitute for depth in an area of specialization.

Yesterday's students who have specialized in agriculture are today producing crops in abundance unheard of by their grandfathers and great-grandfathers at the turn of the century. Where a farmer could produce enough food for himself and four others yesterday, he is producing enough for himself and approximately twenty-five others today. Where it required many hands to keep a large home sparkling clean and large families well-fed yesterday; today, young women trained in home economics are living in better designed homes adorned with carpets and floor coverings which require a minimum of care. A host of laborsaving devices have freed women from many of the drudgeries of housemaid chores to engage in employment of recreational activities.

Since we have more material goods now than ever before, and since it still requires about as much time for a salesman to find prospects, overcome objections, and close sales as it did 50 years ago, the field of marketing is steadily increasing in the numbers required to move America's goods from the producer to consumer. One reason it takes essentially as long to sell consumer goods today as in years past is because today's customer wants to know what he is buying. This calls for product knowledge and the fields of home economics, agriculture, and trades and industry are in the best position to supply youth with such information.

It behooves all of us, however, as educators desirous of holding the standards of vocational education high, to insist that instructors teach only those subjects for which they are qualified. It seems important that we raise an objection to the few isolated cases where some of our vocational educators are allowing administrators to place them in teaching positions they are not qualified to fill. The strong desire to expand our particular vocational discipline must take a subordinate position to the needs of the public we serve.

One question vocational educators might ask themselves when attempting to teach subjects for which they are not prepared is, "What happens when educational administrators assume that anyone can teach distributive education?" Might they also conclude that anyone can teach home economics, agriculture, business, and trades subjects? Will we then lose the program of vocational training to general education? Will we lose the high standards in specialized services, which have resulted in such successful preparation for students in each field? How concerned should we become with "occupational mix" in this world of specialization; could it be we are getting a little mixed up?

THE PRIVATE BUSINESS SCHOOL IN CONTEMPORARY AMERICA

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Historical Beginnings

Private business schools originated in Europe long before their appearance in the United States. Although various forms of business schools existed in the United States during early colonial times, the first major impetus to the business school movement occurred during the early 1800's. Prior to that time, most of the schools in this category were little more than private tutors who traveled around the country teaching penmanship techniques.

The greatest impetus to the growth and development of private business schools in the United States came through the efforts of H. B. Bryant and H. D. Stratton. Between 1852 and 1865, 44 Bryant-Stratton schools were established in 44 cities. The original objective of the partnership was to have at least one business school in every city in the United States which had a population of 10,000 or more.

Educators still praise the efficiency with which the Bryant-Stratton schools were operated, and complement the standards for training which prevailed in the early schools. While the chain of schools was multiplying, many felt that it would monopolize all business education in the United States. Although the monopolizing effect failed to occur, most of the original Bryant-Stratton schools are still in existence today.

One of the most significant contributions made by the Bryant-Stratton chain was that it established the basic foundation upon which both public and private business education was built. Many of the principles and concepts developed by the private schools still form the nucleus of business education programs and curricula of business education at the secondary and post-secondary levels.

Contemporary Implications of the Historical Foundations

The basic appeal of private business schools has not changed significantly in the past 100 years. They have historically been primarily concerned with the development of an employable skill. If a student has had previous commercial training in high school or college, the business school has supplemented such training by starting where the other schools left off. If a student has had no previous business training, the business school places him in beginning courses, which encourage the progressive development of his commercial skills and aptitudes.

Since the advent of increased emphasis on education beyond the high school level, high school business education programs have tended to complement rather than compete with private business schools. Most of the students attending private business schools today have had one or more business subjects in high schools.

Typing, General Business, and Economics are frequently required courses in the high school curriculum. Such courses frequently stimulate student interest and influence their decision to pursue careers in business.

Business schools have historically emphasized the "practical" business subjects, and have relied upon student participation and the active learning process. More than anything else, however, they have always been vitally interested in the development of an employable skill. In order to achieve the objective of employability, they have been philosophically confined to meeting the vocational needs of their students.

Most college and university programs tend to emphasize the theoretical rather than the practical aspects of their subject matter. They have typically been more concerned with educating the "whole man", than have been the private business schools. That philosophy has required students to take a variety of "general education" subjects. Such subjects dominate freshman and sophomore curricula, and influence the approach which is taken in students' "major" areas of study.

Enrollment of Private Business Schools

In spite of the unprecedented expansion of all types of public and private post-high school educational institutions, private business schools have generally tended to increase in both size and numbers. At the same time, however, their position relative to other types of educational institutions has tended to diminish slightly. There are currently about 1,350 private business schools in the United States, with an enrollment of approximately 400,000 students. This is compared to the six million students currently attending all institutions of higher learning.

Private business schools vary significantly in size, quality of facilities and instruction, and length and types of courses offered. Some of the institutions are extremely small, with fewer than 50 students and only one or two instructors, while a few have enrollments of over 1,000. The typical business school in contemporary America has an enrollment of about 200 students.

Faculty and Staff

Although some business schools still occasionally hire some of their better graduates as instructors, the practice is rapidly disappearing. Accreditation controls and restrictions have been largely responsible for this change. Almost all instructors in private business schools possess at least a bachelor's degree, with many of them holding advanced degrees. It is not unusual to find lawyers, Certified Public Accountants, and other specialized professional personnel on the staffs of the private institutions.

Because of their unique position, quality instruction is imperative if private business schools are going to survive. The quality of instruction combines with numberous other factors which ultimately determine the quality of their finished product--the employable graduate. If the graduates are not employable upon graduation, the institution will suffer more than the graduates.

Employment Objectives

In order to help insure the employability and employment of their graduates, private business schools typically engage in many practices which are peculiar only to private schools. Because employers hire individuals for office positions, and not merely human robots, special attention is given to personal habits, grooming, personality development, and other traits which are frequently overlooked in the classroom.

Most schools have minimum skill requirements for graduation, which supplement the usual minimum academic requirements. Skill requirements are generally restricted to the areas of typewriting, dictation, transcription, and office machines. Some of the unique original business school courses which have been retained by most of the private schools include: spelling, penmanship, word studies or vocabulary development, business letter writing, and business mathematics. Although these courses are seldom found beyond the eighth grade, most employers and business school administrators have found the courses to be very instrumental in the success of business school graduates. Too often, college graduates, as well as high school graduates, cannot spell, write legibly, or calculate such things as simple mark-ups and mark-downs; thus frequently giving the business school graduate a competitive advantage in the employment situation.

In recent years, however, many of the community or junior colleges have begun to introduce courses which are similar to those which have previously been peculiar only to private business schools. Some of the curricula include courses in Personality Development, which are similar to the "Mr. Executive" and "Nancy Taylor" courses commonly found in private business schools throughout the United States.

To further insure the placement of their graduates, almost all provate business schools have a placement bureau of placement service. One of the functions, duties, and privileges of membership in the United Business Schools Association, (UBSA), is the provision of a free, lifetime, nationwide placement service on a reciprocal basis for the graduates of all member institutions. The geographic distribution and representation of the member school implies that a free placement service is available for most business school graduates in almost all metropolitan centers and in every state which has a private business school.

Curriculum Balance

During the early years of business education, there were almost no women employed in offices or in other forms of employment. As a result, almost all of the students attending private business schools were young men. The core curriculum for those students centered around penmanship, business math, and bookkeeping.

It was not until after 1900 that women began entering the general work force and the office occupations. As the demands of industry changed, the private schools modified their basic program structure. Typing, shorthand, and the more frequent employment of women in the office occupations all progressed with great rapidity during World War I. The evolutionary shift in emphasis has resulted in the majority of private business schools catering strongly to the female population.

Some schools have restricted their curriculum to exclusively secretarial training, which implies an almost universal all-girl enrollment. Most business schools, however, have retained, expanded, and developed their business administration and accounting programs, which are primarily oriented to the male population. While the sex-distribution of students varies from one school to the next and from one time of the year to another, girls typically outnumber the boys by a ratio of two or three-to-one.

Regulatory Bodies

One of the most important factors which has influenced the contemporary development of private business schools has been the increased emphasis placed upon self-regulation. About 500 of the nation's 1,350 business schools are members of the United Business Schools Association, (UBSA). UBSA is a self-regulatory body, which has established standards of practice for business schools and enforces a rigid Code of Ethics. The Association was formed in 1962, as a result of the merger of the National Association and Council of Business Schools and the American Association of Business Schools.

Since 1952, the Accrediting Commission for Business Schools, (ACBS), has functioned in a self-regulatory, accrediting capacity. In 1956 the

Commission became recognized by the United States Office of Education as the official accrediting organization for private business schools. By 1967, over 250 private business schools had been granted accreditation through the Accrediting Commission for Business Schools.

Employment Opportunities in the Future

Statistics indicate that the unprecedented increase in the number of office jobs will continue indefinitely into the future. It is estimated that one million new office jobs are being created each year. From 1950 to 1960, the number of office employees increased by 31 per cent. It has been estimated that by 1970 there will be over 32 million Americans in the office force, comprising about 37.5 per cent of the labor force.

The constant demand for more and better business-trained personnel continues to open the door of opportunity for individuals interested in pursuing a career in one of the business occupations, and for the educational institutions which prepare those individuals. In the past, private business schools have played an instrumental role in the educative process of preparing competent employees for the various business occupations.

Conclusion: The Need to be Adaptive and Innovative

In order to retain their relative position in business education, private business schools must continue to be innovative and aware of the changing needs and demands of business, industry, government, and the professions. The close liason between the private schools and the employers of their graduates is imperative.

The general response of private business schools in recent years indicates that they are continuing to meet the competitive challenge of other types of educational institutions, as well as responding to the changing demands of the various groups of employers. The flexibility which private school administrators possess is one of their greatest assets.

That flexibility has helped private business schools work their way out of the dilemma of preparing their students for employment immediately following graduation, and preparing them for the changes which are continually taking place in the business world.

The Status of Vocational-Technical Education in Wyoming--A Summary of Two Panel Discussions

Moderator:	Dr. James Zancanella	Head, Department of Business and Vocational Education, University of Wyoming
Participants:	Mr. Charles Kline	Director, Vocational-Technical Education, Wyoming State Department of Education
	Mr. Charles Burke	Consultant, Industrial Arts Education, Wyoming State Department of Education
	Mr. Lewis Finch	Director, Research and Development Wyoming State Department of Education
	Mrs. Myrtle Gillespie	Director, Home Economics Education Wyoming State Department of Education
	Mr. Marvin Hoflund	Director, Trade and Industrial Education, Wyoming State Department of Education
	Mr. Thomas Morris	Director, Pupil Personnel Services Wyoming State Department of Education
	Mr. Keiji Okano	Director, Business and Distributive Education, Wyoming State Department of Education
	Mr. Bruce Perryman	Director, Research Coordinating Unit, Wyoming State Department of Education
	Mr. Richard Rowles	Director, Adult Basic Education , Wyoming State Department of Education
	Mr. James Durkee	Teacher Educator, Agricultural Education, University of Wyoming
	Mr. Jack Ruch	Teacher Educator, Agricultural Education, University of Wyoming
	Mr. Robert Schliske	Director of Manpower Training, Wyoming State Department of Education

QUESTION (Dr. Zancanella): "What type of vocational education program should we have in Wyoming high schools?"

Mr. Kline (State Director of Vocational Education): The Governor's Committee on Vocational-Technical Education which was implemented in 1967 came up with a set of recommendations in their progress report that was released on June 18, 1968. They believed it is extremely urgent to develop a master plan for vocational education. From this master plan will come the guidelines for the type of vocational education program that can best serve the needs of the state; not only for youth in elementary and secondary schools, but also the post-secondary students. The Committee recognizes the importance of having a correlated program and this is definitely going to be a major consideration in the master plan.

The Governor's Committee has further emphasized the development of the area concept of vocational education. Under this concept we would utilize current facilities and encourage more districts to become involved in the support of these facilities. The smaller districts in the state can not from a practical standpoint have a total program of vocational education. This does not mean that we are going to have a boon in new facilities, but rather we are going to have some expansion with current facilities and the addition of more staff members. This concept is being developed in many of the states.

Question (Dr. Zancanella): "Are we trying to meet the individual's needs within the state?"

Mr. Kline: We are very pleased with the change in attitude of many of the people who served on the Governor's Committee. Most of them came with the preconceived idea that you develop programs based on local needs. This was true at one time but this has all changed.

Mr. Rowles (State Director of Adult Basic Education): I do not think vocational education has been meeting the needs of the people. This also goes for general education. If all the programs of education had been meeting their goals, then we would not have as many programs such as the one I am associated with. Wyoming currently receives for the fiscal year of 1968, $120,299 for the Adult Basic Education program. We are anticipating this amount to be the same for the fiscal year 1969. At the present time, we have 43 Adult Basic Education programs going on throughout the state. This includes the local school districts, the State Penitentiary, and the Wyoming State Mental Hospital. The program is also implemented into the community colleges at Torrington and Powell.

Question (Dr. Zancanella): "What does the program, Designing Education for the Future, foresee in vocational education for Wyoming?"

Mr. Finch (State Director, Research and Development): As it has been developed in Wyoming, Designing Education for the Future is an eight-state cooperative program. It is believed that the Rocky Mountain states have similar problems in education and so these states have organized to discuss the similarities, their mutual problems and their possible solutions. In Wyoming we have been concerned with three major areas. One was to study financial support for education in the 1980's. The second was to work on curriculum possibilities; and the third was the establishment of model programs. Two problems exist in Wyoming that greatly affect the vocational program. These are the sparsely populated areas that exist within the state which handicap any type of cooperative program and any type of area vocational school. The second problem is the tremendous variety of occupations in Wyoming. Ten years from now there are going to be many jobs that do not even exist today. These are real problems when you start to design a curriculum at the high-school level. We have to keep in mind that we do not want to perpetuate a program that is designed to be absolutely terminal at the end of twelve years of school. Most of the jobs in the future are going to demand a continuing educational attitude.

Question (Dr. Zancanella): "What is the future of Agricultural Education in Wyoming?"

Mr. Ruch (Teacher-Educator, Agricultural Education, University of Wyoming): There is much evidence available to support the position that the image of vocational education in agriculture has changed considerably in the past five years. The change has been almost revolutionary, and this can be said of all vocational education programs.

Many problems have occurred in the broadening of the agricultural education program in vocational education. The passage of the Vocational Education Act in 1963 opened up the area for the "off-farm" preparation for those jobs fully related to agriculture. These are occupations closely related to agriculture where agricultural training and experience help the individual to succeed. These programs will provide the students in the future greater chances of success in obtaining jobs using agricultural education where the trend has been the decreased need for agricultural workers.

Question (Dr. Zancanella): "What has been the role of Vocational Guidance in Wyoming's Vocational Education program?"

Mr. Morris (State Director of Pupil Personnel Services): My job is divided into two responsibilities; half of my time is to be spent with the Vocational Division and half with the administration of a Federal program which concerns guidance, counseling, and testing. We are primarily concerned with coordinating vocational guidance into the high-school curriculum. In 1967, there was a requirement that went into effect for the certification of guidance counselors. It stated that in order for a person to be certified he must have either a course in philosophy of vocational education or have spent one year outside the field of education. What we are trying to do is to get as varied or as broad a background as possible for our counselors so they will have a general idea about the world of work. It is questionable if there is anyone who is qualified in all areas of work as far as experience is concerned but it is important that some attempts are made to be concerned with this problem.

Question (Dr. Zancanella): "What has been the role of the Manpower Development Training Program in Wyoming?"

Mr. Schliske (Director of Manpower Development Training): This division came about through the Manpower Development

Training Act of 1962, which comes under Public Law No. 87415. This act has been amended many times since 1962, and consequently, our most recent concern in Manpower Training is working with the unemployed or underemployed individuals. In Wyoming 65 per cent of our program has been concerned with disadvantaged people. The definition of disadvantaged people is directed toward five criteria. These criteria are: post-school dropouts, minority members of our community, disadvantaged youth under twenty-two years of age and over forty-five years of age, and the handicapped.

Originally, in Wyoming our programs were set up on a class-group basis where there had to be at least ten students enrolled in the class before it could be offered. Since then, however, we have been allowed to develop programs which we call the Individual Referral Project. Now we can send any one individual to a given school. This has been found to work best in Wyoming and most of our money is now going into this program. We have trained people in many areas including: auto mechanics, aircraft mechanics, barbering, programming, nursing, and meat cutting. The average cost for training these individuals has been approximately $700.00 per pupil. This excludes the training allowance of $42.00 per week minimum which is allotted the individuals while they are in training. The length of these programs run from six weeks to six months depending on the depth of the course content.

Question (Dr. Zancanella): "What type of Business Education program should the small high schools in Wyoming have?"

Mr. Okano (State Director of Business Education): The program in the small school should be an exploratory type program. Such courses as typewriting, shorthand I and II, office practice, and bookkeeping, are best suited for these schools. However, the business-education curriculum should not be all exploratory because with the proper program many students should be able to meet employable standards upon graduation. Business educators in searching for meaningful solutions to their curricular problems are committed to more effective business education for all students. A curriculum that encompasses general education, office education, and distributive education will provide a truly student-centered approach. An innovative flexible curriculum that provides for students with varied needs will revitalize the entire spectrum of business education.

Mr. Kline (State Director of Vocational Education): The greatest curriculum problem in vocational education is one of keeping the instructional program attuned to rapid social and technological change. Schools with two or more vocational departments should plan and develop high-quality cooperative instructional programs. If only one vocational department is established in a school, it should make every effort to provide the student with competencies for entry-level employment. Cooperation between departments is essential in the smaller schools.

Mr. Morris (State Director of Pupil Personnel Services): The process of preparing for and finding productive employment is rapidly gaining in complexity; the number of persons hired off the streets is decreasing. All this means only one thing: all schools must begin to do something they have not bothered to do in the past--take an active part in helping each student make a satisfactory transition from school to work. The career day is one technique which will be used more and more in Wyoming as one of the steps to make this transition. The week-long unit on occupations will also attempt to provide new depth and intensity to occupational information. What is really needed, however, is a new emphasis on vocational guidance that is measured by a regular place in the school's curriculum.

Question (Dr. Zancanella): "What has been the role of Home Economics in Wyoming?"

Mrs. Gillespie (State Director of Home Economics Education): Home Economics education from 1917 through 1963 was training for the occupation of homemaking. To be a homemaker was our goal. During that period, at least the first part of it, most women were engaged in homemaking and that alone. Very few women were working. Since 1963, home economics has had a two-fold purpose: One is the training for the occupational skill; and the second purpose is to train for homemaking skills. Of all the Federal money that was allotted for home economics education up to 1963, only 10 per cent was to be used for instruction in wage-earning programs. All of the money in the 1963 Vocational Act could be used for either home economics or trade and industry.

The challenge today is to orient and train people for jobs other than homemaking. We must cooperate with other programs; as well as with home economics. Also the home economics teachers have not been prepared for teaching occupational skills. This is an area which requires much research and the development of new programs. However, there are still some courses that everyone needs. We should know about foods, how to get along with people at home or on the job, about child development, socially and emotionally. Everyone needs to know something about managing their resources, money, time, and abilities. We need to know something about homes and about buying clothing. These are things that everyone needs to know something about.

Question (Dr. Zancanella): "What are the recent developments in the vocational agricultural education program in Wyoming?"

Mr. Durkee (Teacher-Educator, Agricultural Education, University of Wyoming): Many ideas have been proposed which could have much influence on agricultural education in Wyoming. A pilot program has been developed which would relate strictly to the small school and its problems. A workshop for vocational agriculture and industrial arts teachers has been proposed. It was hoped that this would help upgrade teachers in these areas where in many small schools' programs overlap. A workshop for administrators, vocational educators, and guidance counselors has been suggested. These areas need to develop a mutual program and philosophy which would lead to needed change in attitudes toward vocational education in our secondary schools. And finally a workshop in farm management for the agricultural teacher has been suggested. Many states who have such a program have found them to be a valuable addition to their teacher-education program.

The junior-college program along with the adult farmer program are areas which need to be expanded in Wyoming. The post-high school program at the present time is very weak. There is not one school where a young man can go to get an education so he can go back and help his dad in farming and ranching.

Question (Dr. Zancanella): "What is the goal of Trade and Industry education in Wyoming?"

Mr. Hoflund (State Director of Trade and Industry Education): Industrial arts is generally considered an introductory or exploratory course and never goes into the depth that is needed to prepare an individual for an occupation, while the trade and industry program is designed to enable the student to go out and get a job upon completion of his training. The trade and industry program in the state at the present time is quite lacking. There are nine secondary programs that are classified as trade and industry. It is questionable whether six of these nine are trade and industry courses because the instructors are not qualified according to the state plan to conduct such a program. There are also two or three post-secondary programs and forty adult programs. The adult programs are probably being conducted more according to the state plan than are the secondary or post-secondary programs. This is possible by the fact that the adult programs are being taught by instructors with at least two years experience in their particular area. In order to meet the requirements of the state plan, the teachers must have a minimum of two years in the particular field of work as a wage earner. This does not mean that it is necessary to have a college degree to teach; however, arrangements must be made to obtain the bachelors degree within a specified time period.

The types of programs we have in the state at the present time are rather limited. They are predominantly in auto mechanics and in the building trades. There are many programs desired by the students in Wyoming and it is up to us to provide these programs within reason, of course.

Question (Dr. Zancanella): "What have been the objectives of Industrial Arts Education in Wyoming?"

Mr. Burke (State Director of Industrial Arts Education): Industrial arts does not attempt to train a person for a vocation. Our goal in industrial arts is simply to introduce the student to industry. Industrial arts is considered an introductory course or an exploratory course and should never go into the depth that is necessary to prepare the individual to go out and sell his skill. But too often industrial arts is just plain shop. What is needed to be done is to give the student an idea, a background, and acquaint him with industry and in so doing, we will make the student aware of industry's role in his life. What industry is going to do for him and what he is going to do for industry is a thought that all students should be more interested in. Industry can make him a better consumer of products through an understanding of the production process. Once the student is acquainted and interested in industrial processes and materials, he is ready to be sent to the vocational trade and industry department for further occupational training. This could be also at a post-secondary school or an apprenticeship program of a manufacturing company.

Industrial arts is now being introduced into some elementary schools in the state. This will not be a training program but rather a familiarization with the basic materials and tools which the children see in their everyday life. It is an attempt to help them realize what it takes to build such things as homes, furniture, cars, and roads.

SUMMARY

Mr. Perryman (Director, Research Coordinating Unit): "In relation to the questions Dr. Zancanella has asked and to the answers which have been given, the main purpose of vocational-technical education in Wyoming is to equip persons for useful employment. Programs are designed to prepare both youth and adults for employment, to retrain them for different jobs, or to help them upgrade themselves from their present positions. Vocational-technical education can also be an effective weapon in the battle to save school dropouts. Preparatory and retraining programs provide the skills, technical knowledge, safety judgements, work habits, attitudes necessary for occupations requiring less than a four-year college degree. Upgrading programs provide instruction for whatever length of time is necessary for a group of employed people to maintain their present jobs, or to prepare them for advancement. Opportunities and benefits of vocational-technical education are numerous. It is difficult for those not going on to college from a general education directly into employment. A marketable skill is needed. Although the federal government can stimulate vocational and technical programs with legislation and the offer of financial assistance, only local and area schools, locally directed and supervised, and operating with the continuous cooperation of business, industry, labor, and education, can develop such programs which provide training for marketable skills.

In addition I strongly recommend that high quality research is needed to determine the future role of vocational-technical education in Wyoming. This research must be done before we can seriously look at any program. Of all the money spent on education only a small amount has been on research. American business and industry have progressed to be the most efficient and competent in the world. They have done this through research, yet in education we have used research as the last step to improve the curriculum. We need unbiased research which is implementive. We need the findings implemented into solid vocational-technical education programs. As this Panel has reported, we need a total program of educational concepts which are articulated, comprehensive, integrated, coordinated, and continuing from K-Adult education with guidance for the world of work. We must strive to develop a workable and efficient system of vocational-technical education."